CLAIM AMENDMENTS

Claims 1-38 (Cancelled)

Claim 39.(New) A scalable block-matching fast motion estimation method for analyzing

a plurality of video frames comprising:

employing at least one block-matching fast motion estimation algorithm profile selected for use

with a predetermined application, selected input data and a determined processing mode;

utilizing available neighboring motion vectors from a spatial and/or temporal domain to form a

motion adaptive pattern or an adaptive rood pattern for performing an initial search of each pixel

block of the plurality of video frames;

conducting a local search of the plurality of video frames using a small diamond search pattern;

conducting an adaptive threshold pre-judgment for detecting no motion blocks in the plurality of

video frames;

computing a local motion activity at each block position of the plurality of video frames;

computing a global motion activity for each video frame;

adapting a search range for each block of each video frame;

predicting a search center for each block;

and estimating motion in the plurality of video frames.

Claim 40.(New) The method of claim 39 wherein the application, input data and processing

mode are selected from the group consisting of bit rates required by select video applications,

block sizes, selected motion-estimation prediction modes from the group consisting of normal

prediction, advanced prediction, frame prediction, field prediction, full-pel, half-pel or quarter-

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pel prediction, select video object planes (VOPs) having different priorities and quality requirements.

Claim 41.(New) The method of claim 39 wherein the profiles are selected from the group consisting of simple, basic, mode adaptive, and main profiles, one or more selected profiles integrated together to form a scalable architecture.

Claim 42.(New) The method of claim 39 wherein the adaptive threshold for each block of a video frame is computed based on a function of a matching error incurred in a previous frame.

Claim 43.(New) The method of claim 39 wherein the computation of local motion activity at each block position comprises:

determining a city-block length of each motion vector of each block that lies in a ROS of a current block, a maximum of the city-block lengths being a grade of local motion activity;

classifying the local motion activity at the current block position into one of three classes: "low", "medium" and "high", based on three non-overlapping ranges of the grade of local motion activity.

Claim 44.(New) The method of claim 39 wherein the computation of the global motion activity for each video frame comprises:

computing a mean and a standard deviation of all of the motion vectors in a video frame, a grade of global motion activity being defined as a maximum of an absolute values of the components

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of the mean motion vector plus three times the standard deviation.

Claim 45.(New) The method of claim 39 further comprising adapting the search range at each block for motion estimation, wherein the search range of a current frame is adaptively varied to be equal to a grade of global motion activity of a reference frame.

Claim 46.(New) The method of claim 39 wherein a local search around a search center is adapted based on a local motion activity.

Claim 47.(New) The method of claim 39 wherein the diamond search pattern is elongated in a vertical direction by one pixel.

Claim 48.(New) The method of claim 39 further comprising obtaining an f code of each VOP and updating the f code for video indexing and retrieval.

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